

PATENTS  
112025-0138  
Seq. No. 987

**IN THE CLAIMS:**

- 1 Please amend claims 1, 3, 4, 5, 8, 13 and 18 as shown below.
- 2
- 3 1. (Currently Amended) A method for determining latency of a selected path in a com-  
4 puter network having a plurality of network nodes, the computer network further includ-  
5 ing a first entity disposed at one end of the selected path and a second entity disposed at a  
6 second end of the selected path, the method comprising the steps of:
- 7 utilizing at least one path state set-up message formulated by the first entity and  
8 passed to each network node along the selected path to establishing a path state at each  
9 network node along the selected path for identifying a traffic flow having predefined pa-  
10 rameters, and for forwarding messages matching the predefined parameters of the traffic  
11 flow to a next downstream network node along the selected path;
- 12 generating a test message at the first entity, the test message addressed to the sec-  
13 ond entity and configured in accordance with the predefined parameters of the traffic  
14 flow;
- 15 placing a time record in the test message;
- 16 transmitting the test message from the first entity;
- 17 in response to receiving the test message at each network node, forwarding the  
18 test message from the receiving network node to the next downstream network node  
19 along the selected path by virtue of the previously established path states;
- 20 in response to receiving the test message at a last downstream network node along  
21 the selected path, forwarding the test message to the second entity by virtue of the previ-  
22 ously established path states;
- 23 using the time record placed in the test message to determine the latency of the  
24 selected path.

PATENTS  
112025-0138  
Seq. No. 987

1 2. (Original) The method of claim 1 wherein the predefined parameters of the traffic flow  
2 include at least a network layer address associated with the first entity and a network  
3 layer address associated with the second entity.

1 3. (Currently Amended) The method of claim 2 wherein the ~~step of establishing com-~~  
2 ~~prises the steps of:~~  
3 ~~formulating~~ at least one path state setup message formulated at the first entity, ~~the~~  
4 ~~at least one path state setup message is~~ addressed to the second entity and includesing:  
5 the predefined parameters of the traffic flow; and  
6 a source routing option that lists, in sequential order, each network node  
7 along the selected path; and the method further comprises the steps of:  
8 ~~transmitting the at least one path state setup message from the first entity into the~~  
9 ~~computer network;~~  
10 in response to receiving the at least one path state setup message at each network  
11 node, forwarding the at least one path state setup message from the receiving network  
12 node to the next downstream network node along the selected path by virtue of the source  
13 routing option; and  
14 in response to receiving the at least one path state setup message at the last down-  
15 stream network node along the selected path, forwarding the at least one path state setup  
16 message to the second entity.

1 4. (Currently Amended) The method of claim 3 ~~wherein the step of establishing further~~  
2 ~~comprisinges~~ the steps of:  
3 ~~formulating~~ at least one path state reservation message at the second entity, the at  
4 least one path state reservation message addressed to the last downstream network node  
5 along the selected path and including the predefined parameters of the traffic flow;  
6 ~~transmitting the at least one path state reservation message from the second entity~~  
7 ~~into the computer network;~~

PATENTS  
112025-0138  
Seq. No. 987

8 in response to receiving the at least one path state reservation message at each  
9 network node, including the last downstream network node, (1) establishing a path state  
10 corresponding to the predefined parameters of the traffic flow, and (2) sending at least  
11 one corresponding path state reservation message from the receiving network node to a  
12 next upstream network node;

13 in response to receiving the at least one path state reservation message at a last  
14 upstream network node along the selected path, forwarding the path state setup message  
15 to the first entity.

1 5. (Currently Amended) The method of claim 4 wherein the step of using the time record  
2 placed in the test message comprises the steps of:

3 generating a second test message at the second entity, the second test message ad-  
4 dressed to the first entity and containing the time record from the received test message;  
5 transmitting the second test message from the second entity to the first entity;  
6 constraining the second test message to follow the selected path in the computer  
7 network;

8 upon receiving the second test message at the first entity, comparing the time rec-  
9 ord with a current time to determine the latency of the selected path.

1 6. (Original) The method of claim 5 wherein the step of constraining comprises the steps  
2 of establishing a second path state at each network node along the selected path for iden-  
3 tifying a second traffic flow having predefined parameters, and for forwarding messages  
4 matching the predefined parameters of the traffic flow to the next upstream network node  
5 along the selected path, wherein  
6 the second test message generated by the second entity is configured in accordance with  
7 the predefined parameters of the second traffic flow.

1 7. (Original) The method of claim 4 wherein the step of using comprises the steps of:  
2 providing a clock management facility at each of the first and second entities;

PATENTS  
112025-0138  
Seq. No. 987

3 synchronizing the clock management facilities at the first and second entities;  
4 upon receiving the test message at the second entity, comparing the time record  
5 with a current time to determine the latency of the selected path.

1 8. (Currently Amended) A computer readable medium containing executable program  
2 instructions for generating a path state setup message, the path state setup message for  
3 establishing a path state at one or more network nodes along a selected path between first  
4 and second entities of a computer network, the executable program instructions compris-  
5 ing steps for:

6 inserting into the path state setup message a source routing option that lists one or  
7 more network nodes along the selected path; and

8 inserting into the path state setup message one or more parameters that define a  
9 selected traffic flow that is to be associated with a test message for determining a latency  
10 of the selected path, wherein

11 the path state setup message is generated by the first entity and passed to each of  
12 the one or more network nodes along the selected path.

1 9. (Original) The computer readable medium of claim 8 comprising further program in-  
2 structions for listing each of the network nodes along the selected path in the source  
3 routing option.

1 10. (Original) The computer readable medium of claim 9 comprising further program in-  
2 structions for rendering the path state setup message free from having a sender traffic  
3 specifier.

1 11. (Original) The computer readable medium of claim 10 comprising further program  
2 instructions for inserting into the path state setup message a router alert option.

PATENTS  
112025-0138  
Seq. No. 987

1 12. (Original) The computer readable medium of claim 8 comprising further program in-  
2 structions for rendering the path state setup message free from having a sender traffic  
3 specifier.

1 13. (Currently Amended) A network node for use in a computer network, the network  
2 node disposed along a selected path between first and second entities, the network node  
3 comprising:

4 a plurality of interfaces configured to receive and forward messages;  
5 an options processor in communicating relationship with the plurality of inter-  
6 faces, the options processor configured to implement one or more options included in a  
7 received path state setup message received from the first entity and identifying a traffic  
8 flow; and

9 a signaling protocol processor in communicating relationship with the options  
10 processor,

11 wherein the options processor and signaling protocol processor cooperate to implement a  
12 source routing option included in the path state setup message by initializing a path state  
13 associated with the traffic flow and forwarding the path state setup message to a next  
14 network node as identified in the source routing option.

1 14. (Original) The network node of claim 13 further wherein the signaling protocol proc-  
2 essor, in response to receiving a path state reservation message at the network node, es-  
3 tablishes the previously initialized path state.

1 15. (Original) The network node of claim 14 wherein the path state reservation message  
2 includes one or more parameters that define a selected traffic flow, the network node  
3 further comprising a packet classifier operatively coupled to the signaling protocol proc-  
4 essor,

5 whereby the signaling protocol processor configures the packet classifier to identify for  
6 messages matching the one or more parameters of the selected traffic flow.

PATENTS  
112025-0138  
Seq. No. 987

1 16. (Original) The network node of claim 15 further comprising a packet scheduler  
2 operatively coupled to the signaling protocol processor, whereby the signaling protocol  
3 processor establishes a short-cut at the packet scheduler for application to messages iden-  
4 tified by packet classifier as matching the one or more parameters of the selected traffic  
5 flow.

1 17. (Original) The network node of claim 16 wherein the signaling protocol processor is a  
2 resource reservation protocol processor.

1 18. (Currently Amended) An apparatus for generating a path state setup message, the  
2 path state setup message for establishing a path state at one or more network nodes along  
3 a selected path of a computer network between first and second entities, the apparatus  
4 comprising:  
5 means for inserting into the path state setup message a source routing option that  
6 lists one or more network nodes along the selected path; and  
7 means for inserting into the path state setup message one or more parameters that  
8 define a selected traffic flow that is to be associated with a test message for determining a  
9 latency of the selected path, wherein  
10 the apparatus is disposed at the first entity and the path state setup message is  
11 generated by and transmitted from the first entity.

1 19. (Previously Added) An apparatus as defined in claim 18 comprising:  
2 means for listing each of the network nodes along the selected path in the source  
3 routing option.

1 20. (Previously Added) An apparatus as defined in claim 18 comprising:  
2 means for rendering the path state setup message free from having a sender traffic  
3 specifier.